

**We Claim:**

1. A method for identifying compounds that modulate human orexin-2 receptor activity, comprising:
  - a) combining a putative modulator of human orexin-2 receptor activity with human orexin-2 receptors contained within membranes of cells non-recombinantly possessing the human orexin-2 receptor; and
  - b) measuring an effect of the modulator on activity of the human orexin-2 receptor.
2. The method of claim 1, wherein the human orexin-2 receptors are contained within membranes of intact cells.
3. The method of claim 1, wherein the human orexin-2 receptors are contained within membrane structures selected from the group consisting of isolated membrane fragments, unilamellar vesicles and multilamellar vesicles.
4. The method of claim 1, wherein the cells possessing the human orexin-2 receptor are PFSK-1 cells.
5. The method of claim 1, wherein the effect measured in step (b) is binding of the putative modulator to the orexin-2 receptors.
6. The method of claim 1, wherein the effect measured in step (b) is competition of the putative modulator with a known ligand of the human orexin-2 receptor for binding to the receptors.
7. The method of claim 2, wherein the effect measured in step (b) is modulation of a human orexin-2 receptor intracellular second messenger.

8. The method of claim 7, wherein the intracellular second messenger is selected from a group consisting of cAMP,  $\text{Ca}^{++}$ , and a reporter gene product.
- 5 9. The method of claim 8, wherein the cells are transfected with a G $\alpha$ -protein DNA construct.
10. The method of claim 8, wherein the intracellular second messenger is  $\text{Ca}^{++}$ , detected with a fluorescent  $\text{Ca}^{++}$  indicator.
- 10 11. The method of claim 1, adapted to distinguish the putative modulator as an agonist, antagonist or inverse agonist of the orexin-2 receptor.
12. A kit for use in identifying compounds that modulate human orexin-2 receptor activity, comprising a container containing human orexin-2 receptors contained within  
15 membranes of cells possessing the human orexin-2 receptor, and instructions for use of the receptors to identify compounds that modulate human orexin-2 receptor activity.
- 20 13. The kit of claim 12, comprising intact cells possessing human orexin-2 receptors.
14. The kit of claim 12, further comprising one or more of:
- a) a known ligand of orexin-2 receptor;
- b) reagents for detecting an effect of a putative modulator on orexin-2 receptor  
25 activity; and
- c) one or more buffers or diluents for practicing an assay to identify compounds that modulate human orexin-2 receptor activity.
15. A compound identified using the method of claim 1, wherein said compound was  
30 not previously known to be a modulator of a human orexin-2 receptor.

16. A compound identified using the method of claim 1, wherein the compound is an agonist, antagonist, or inverse agonist of a human orexin-2 receptor or modulates a  $\text{Ca}^{++}$  channel activated by the human orexin-2 receptor.
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17. A pharmaceutical composition comprising the compound of claim 15 and a pharmaceutically acceptable carrier.
18. A method of treating a patient in need of such treatment for a condition that is mediated by a high amount or activity of a human orexin-2 receptor comprising administration of a pharmaceutical composition of claim 17, of a type that lowers the amount or activity of the orexin-2 receptor.
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19. The method of claim 18, wherein the condition is selected from the group consisting of sleep/wake transition disorders, insomnia, hypermetabolism, hypertension, tachycardia, overweight, obesity, Parkinson's Disease, Tourette's Syndrome, anxiety, delirium and dementia.
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20. A method of treating a patient in need of such treatment for a condition that is mediated by low presence or activity of a human orexin-2 receptor comprising administration of a pharmaceutical composition of claim 15, of a type that increases the amount or activity of the orexin-2 receptor.
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21. The method of claim 20, wherein the condition is selected from the group consisting of narcolepsy, jet lag, hypometabolism, hypotension, bradycardia and lack of appetite.
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